



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

Central Regional Office • 627 Main Street, Worcester MA 01608 • 508-792-7650

DEVAL L. PATRICK  
Governor

MAEVE VALLELY BARTLETT  
Secretary

DAVID W. CASH  
Commissioner

July 18, 2014

Tom Richard  
IPG Photonics Corporation, Inc.  
50 Old Webster Road  
Oxford, MA 01540

**RE: Oxford**  
Transmittal No.: X237422-A1  
Application No.: CE-11-003  
Class: *SM-50*  
FMF No.: 340166  
**AIR QUALITY PLAN APPROVAL**

Dear Mr. Richard:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Waste Prevention, has reviewed your Limited Plan Application (“Application”) listed above. This Application concerns the proposed amendment of Plan Approval Transmittal No. X237422, which was issued November 10, 2011 for the fiber optic device manufacturing process at your facility located at 50 Old Webster Road in Oxford, Massachusetts (“Facility”).

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-N, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

## **1. DESCRIPTION OF FACILITY AND APPLICATION**

### **A. FACILITY DESCRIPTION**

The Permittee is a manufacturer of fiber optic devices. The following equipment and processes that have the potential to emit contaminants to the ambient air are in use at the facility.

#### **1. Equipment/Processes with insignificant amounts of emissions**

- 8 (eight) natural gas fired boilers, each rated at less than 2.5 million BTU per hour (products of combustion emitted)
- Soldering, lead-free plus small amounts of lead solder (small amount of particulates emitted)
- Molecular beam epitaxy (MBE) reactors (small amount of particulates emitted)
- dilute acid baths for cleaning (small amounts of acid vapors emitted)

#### **2. Processes with significant amounts of emissions**

- Solvent cleaning in small containers (beakers)
- General solvent cleaning (production area)

The solvents used for cleaning include isopropyl alcohol, AZ Kwik Strip, methanol, and acetone. A significant portion of the solvents used are recovered in waste disposal containers and leave the facility as hazardous waste. The rest of the solvents evaporate and are emitted as fugitive emissions. The fugitive solvent emissions fall into three categories:

- Acetone (non-photochemically reactive hydrocarbon or HYC)
- Volatile Organic Compounds (VOC). Currently isopropyl alcohol is the primary VOC emitted.
- Hazardous Air Pollutants (HAPs). These are VOC compounds that are also on the USEPA HAP list. The individual VOC compounds that are listed HAPs in the present cleaning solvents are glycol ethers (ingredient of AZ Kwik Strip) and methanol.

### **B. PERMITTING HISTORY**

On November 27, 2000 MassDEP issued Plan Approval Transmittal #W016061 to IPG Photonics Corporation ("the Permittee") for the construction and operation of this facility. Plan Approval Transmittal #W016061 imposed limits on the emissions of air contaminants from the facility, particularly total Volatile Organic Compounds (VOC)/Hazardous Air Pollutants (HAPs), which was limited to 4.9 tons per year. On November 2, 2010 MassDEP issued Plan Approval Transmittal #X231856 to the Permittee for the purpose of establishing separate emission limits for acetone (set at 9.9 tons per year) and VOC (remained at 4.9 tons per year). On November 10, 2011 MassDEP issued Plan Approval Transmittal No. X237422 for the increase of VOC/HAP limits from 4.9 to 9.9 tons per year.

### **C. PROJECT DESCRIPTION**

On February 28 and March 21, 2014 the Permittee met with MassDEP to discuss ongoing operations and emissions as they related to the current emission factors and emission limits. After these meetings, the Permittee conducted a study of actual emission factors at the Facility, and in a letter dated June 6, 2014 presented the results of that study to MassDEP. This letter requested a change in emission factors from what was specified in Plan Approval Transmittal No. X237422. This request was in accordance with Special Condition B.2. of Plan Approval Transmittal No. X237422, which provided a mechanism for the Permittee to propose alternative emission factors.

The purpose of this Plan Approval No. X237422-A1 is to amend Plan Approval Transmittal No. X237422 by updating the Facility emission factors based on the above study. There will be no change in the Facility emission limits from what was stated in Table 1 of Plan Approval Transmittal No. X237422.

**This Plan Approval No. X237422-A1 supersedes and replaces Plan Approval Transmittal No. X237422.**

## **2. EMISSION UNIT (EU) IDENTIFICATION**

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

<b>Table 1</b>			
<b>EU#</b>	<b>Description</b>	<b>Design Capacity</b>	<b>Pollution Control Device (PCD)</b>
1	Solvent Cleaning	n/a	None

**Table 1 Key:**

EU# = Emission Unit Number

PCD = Pollution Control Device

## **3. APPLICABLE REQUIREMENTS**

### **A. OPERATIONAL, PRODUCTION and EMISSION LIMITS**

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2:

Table 2			
EU#	Operational / Production Limit	Air Contaminant	Emission Limit
1	1. None	VOC	1.65 TPM, 9.9 TPY
		HAP(single)	0.8 TPM, 4.9 TPY
		HYC (acetone)	1.65 TPM, 9.9 TPY

**Table 2 Key:**

EU# = Emission Unit Number

VOC = Volatile Organic Compounds

HAP (single) = maximum single Hazardous Air Pollutant

HAP (total) = total Hazardous Air Pollutants.

HYC = non-methane hydrocarbon

TPM = tons per month

TPY = tons per consecutive 12-month period

**B. COMPLIANCE DEMONSTRATION**

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5:

Table 3	
EU#	Monitoring and Testing Requirements
1	1. The Permittee shall monitor use of all solvents used in cleaning in order to track emissions on a monthly basis.
Facility-wide	2. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	3. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and Regulation 310 CMR 7.13

**Table 3 Key:**

EU# = Emission Unit Number

USEPA = United States Environmental Protection Agency

Table 4	
EU#	Record Keeping Requirements
Facility-wide	1. The Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve-month period (current month plus prior eleven months). These records shall be compiled no later than the 15 <sup>th</sup> day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at <a href="http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping">http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping</a> .
	2. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	3. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU(s) approved herein on-site.
	4. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	5. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s) and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	6. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	7. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	8. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

**Table 4 Key:**

EU# = Emission Unit Number

PCD = Pollution Control Device

SOMP = Standard Operating and Maintenance Procedure

USEPA = United States Environmental Protection Agency

<b>Table 5</b>	
<b>EU#</b>	<b>Reporting Requirements</b>
Facility-wide	1. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	2. The Permittee shall notify the Central Regional Office of MassDEP, BWP Permit Chief by telephone: 508-767-2845, email: CERO.Air@massmail.state.ma.us or fax : 508-792-7621, as soon as possible, but no later than one (1) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to Permit Chief at MassDEP within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	3. The Permittee shall report every three years to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	4. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30 days from MassDEP’s request.
	5. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	6. The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

**Table 5 Key:**

EU# = Emission Unit Number

#### **4. SPECIAL TERMS AND CONDITIONS**

The Permittee is subject to, and shall comply with, the following special terms and conditions:

- A. The Permittee is subject to and shall comply with the Special Terms and Conditions as contained in Table 6:

Table 6	
EU#	Special Terms and Conditions
	<p>1. The Permittee shall use the following emission factors in calculating cleaning solvent emissions (percentages are all by weight):</p> <ul style="list-style-type: none"> <li>a) Isopropyl Alcohol = 13% emitted (non-HAP VOC)</li> <li>b) AZ Kwik Strip = 4% emitted. (For purposes of calculating HAP emissions, it shall be assumed that 100% of the portion of AZ Kwik Strip that is emitted is glycol ether, a HAP-VOC.)</li> <li>c) Methanol = 100% emitted (HAP-VOC)</li> <li>d) Acetone = 13% emitted (HYC).</li> </ul> <p>In addition, for purposes of emission calculations, the emissions shall be counted as occurring at the time that the particular portion of chemical is issued for use.</p>
	<p>2. If Permittee wishes to use any alternative emission factors, they must first be approved by MassDEP. Also the Permittee may use alternative solvents not on the above list, provided that</p> <ul style="list-style-type: none"> <li>a) The solvent is first proposed to MassDEP and approved;</li> <li>b) The emission factor for the solvent shall be 100% until such time as the Permittee performs measurements and/or provides documentation for another emission factor and MassDEP has approved the emission factor.</li> <li>c) Emissions resulting from use of the solvent remain within the approved emission limits in Table 2.</li> </ul>
	<p>3. The Permittee shall use good housekeeping methods. Good housekeeping is defined as storing, using and disposing of formulations/wipes containing HAP/VOC in a manner, which will minimize evaporation to the atmosphere. Proper storage shall be in a container with a tight fitting cover and covered containers shall be used during mixing and transferring the HAP/VOC containing formulations.</p>
	<p>4. The Permittee shall use best management practices to reduce solvent usage and emissions. Best management practices include but are not limited to: eliminating the use of methanol (a HAP) where possible; using cleaning solvents in small containers, and covering them when not in use; and issuing solvents in a controlled and documented manner.</p>

**Table 6 Key:**

EU# = Emission Unit Number  
 VOC = Volatile Organic Compounds  
 HAP = Hazardous Air Pollutant  
 HYC = non-methane hydrocarbon

## **5. GENERAL CONDITIONS**

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.



- J. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

## **6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT**

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions," which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

## **7. APPEAL PROCESS**

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with

the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Enclosed is a stamped approved copy of the application submittal.

Should you have any questions concerning this Plan Approval, please contact Paul Dwiggins by telephone at 5058-767-2760 or in writing at the letterhead address.

This final document copy is being provided to you electronically by the  
Department of Environmental Protection. A signed copy of this document  
is on file at the DEP office listed on the letterhead.

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Roseanna E. Stanley  
Acting Permit Chief  
Bureau of Waste Prevention

Enclosure

ecc: Oxford Board of Health BOH@town.oxford.ma.us  
Oxford Fire Department  
MassDEP/Boston - Yi Tian